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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR    | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/796,955      | 03/10/2004  | Richard M. Manderscheid | WJT002-0040         | 4500             |

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INTELLECTUAL PROPERTY DEPARTMENT  
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EXAMINER

BLEVINS, JERRY M

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2883

DATE MAILED: 05/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |   |   |  |
|------------------------------|---|---|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/796,955    | <b>Applicant(s)</b><br>MANDERSCHIED, RICHARD M. |  |
|                              | <b>Examiner</b><br>Jerry Martin Blevins | <b>Art Unit</b><br>2883                         |  |

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-11, 13-16, 19-30 and 32 is/are rejected.
- 7) ☒ Claim(s) 4, 12, 17, 18, 31, 33 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. ____   |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>03/10/04</u>  | 6) <input type="checkbox"/> Other: ____                                     |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 5-7, 8, 13, and 28 are rejected under 35 U.S.C. 102(e) as being anticipated by US Pre Grant Publication to Bartur et al, number 2003/0147601.

Regarding claims 1, 2, 7, 8, and 28, Bartur teaches an optic triplexer (device) (Figure 2B and paragraph 10) comprising an emitting laser (Figure 2B, element 224 and paragraphs 10 and 27) for transmitting a 1310 nm optical signal (paragraph 27), a first (at least one) photodiode (Figure 2B, element 130 and paragraphs 10 and 27) for receiving a 1490 nm optical signal (paragraph 27), and a second photodiode (Figure 2B, element 210 and paragraphs 10 and 27) for receiving a 1550 nm signal (paragraph 27), wherein the first (at least one) and second photodiodes and the emitting laser are monolithically integrated on a substrate (Figure 2D, element 212 and paragraph 10).

Regarding claims 5 and 13, Bartur teaches the limitations of base claims 1 and 7, respectively. Bartur also teaches that the triplexer also comprises a 1490 nm thin film

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filter (Figure 2C, element 213 and paragraph 27) located between the first photodiode and the second photodiode.

Regarding claim 6, Bartur teaches the limitations of the base claim 1. Bartur also teaches that the laser and photodiodes are packaged within a transistor outline can (paragraph 22).

Claims 28-30 and 32 are rejected under 35 U.S.C. 102(e) as being anticipated by US Pre Grant Publication to Kondo, number 2004/0007709.

Regarding claims 28-30 and 32, Kondo teaches an optic device comprising an emitting laser that is monolithically integrated and placed on top of at least one photodiode that is monolithically integrated on a substrate (paragraph 41). Kondo teaches the provision of the substrate, the monolithical formation of the at least one photodiode on the substrate, and the placing and monolithical formation of the emitting laser on the top of the last formed photodiode (paragraph 41).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 9, 16, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bartur in view of Kondo.

Regarding claims 3 and 9, Bartur teaches the limitations of base claims 1 and 7, respectively. Bartur does not teach that the emitting laser is placed on one of (the first) the photodiodes. Kondo teaches an optic device comprising an emitting laser that is monolithically integrated and placed on top of at least one photodiode that is monolithically integrated on a substrate (paragraph 41). It would have been obvious to one of ordinary skill in the art at the time of the invention to place the laser of Bartur on top of one of the photodiodes as taught by Kondo. The motivation would have been to save space, since this implementation would produce a more compact triplexer.

Regarding claims 16 and 19, Bartur teaches the provision of a substrate (Figure 2D, element 212 and paragraph 10), the monolithical formation on the substrate of a photodiode capable of receiving a 1550 nm optical signal (Figure 2B, element 210 and paragraphs 10 and 27), the monolithical formation on the substrate of another photodiode capable of receiving a 1490 nm optical signal (Figure 2B, element 130 and paragraphs 10 and 27), and the monolithical formation of an emitting laser capable of transmitting a 1310 nm optical signal (Figure 2B, element 224 and paragraphs 10 and 27). Bartur does not teach that the second photodiode is monolithically formed on top of the first photodiode. Bartur also does not teach that the laser is placed/monolithically formed on top of the second photodiode. Kondo teaches an optic device comprising an emitting laser that is monolithically integrated and placed on top of the top surface of at least one photodiode that is monolithically integrated on a substrate (paragraph 41). It

would have been obvious to one of ordinary skill in the art at the time of the invention to place the laser of Bartur on top of the top surface of the photodiodes as taught by Kondo. The motivation would have been to save space, since this implementation would produce a more compact triplexer.

Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bartur in view of US Patent to Eden et al, number 4,110,778.

Regarding claims 10 and 11, Bartur teaches the limitations of base claim 7, but does not teach that the first and second photodiodes have cutoff wavelengths dependent on the relative concentrations of dopants in the substrate. Eden teaches a photodiode with a cutoff wavelength dependent on the dopant concentration in the substrate (column 1, lines 56-68). It would have been obvious to one of ordinary skill in the art at the time of the invention to include the cutoff wavelength characteristics taught by Eden in the photodiodes of Bartur. The motivation would have been to save costs, since this cutoff wavelength characteristic is in line with industry standards.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bartur in view of US Pre Grant Publication to Hwang et al, number 2002/0163952.

Bartur teaches the limitations of the base claim 7 but does not teach that the laser is a vertical cavity surface emitting laser (VCSEL). Hwang teaches a multiplexing system (paragraph 20) incorporating VCSELs (paragraph 23). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a VCSEL

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laser, as taught by Huang, in the triplexer of Bartur. The motivation would have been to obtain any of the following parameters: a low threshold current, a single longitudinal mode, a circular output beam profile, and a smaller divergence angle (Hwang paragraph 12).

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bartur in view of US Pre Grant Publication to Kuramata, number 2003/0113053.

Bartur teaches the limitations of the base claim 7 but does not teach that the substrate is an InGaAs substrate. Kuramata teaches that InGaAs substrates are widely used as the substrates of semiconductor lasers (paragraph 177). It would have been obvious to one of ordinary skill in the art at the time of the invention to use an InGaAs substrate, as taught by Kuramata, as the substrate in the triplexer of Bartur. The motivation would have been to produce the triplexer economically.

Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bartur in view of Kondo further in view of Hwang.

Bartur in view of Kondo teaches the limitations of the base claim 16 but does not teach that the laser is a vertical cavity surface emitting laser (VCSEL). Hwang teaches a multiplexing system (paragraph 20) incorporating VCSELs (paragraph 23). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a VCSEL laser, as taught by Huang, in the triplexer of Bartur. The motivation would have been to obtain any of the following parameters: a low threshold current, a single

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longitudinal mode, a circular output beam profile, and a smaller divergence angle (Hwang paragraph 12).

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bartur in view of Kondo further in view of Kuramata.

Bartur in view of Kondo teaches the limitations of the base claim 16 but does not teach that the substrate is an InGaAs substrate. Kuramata teaches that InGaAs substrates are widely used as the substrates of semiconductor lasers (paragraph 177). It would have been obvious to one of ordinary skill in the art at the time of the invention to use an InGaAs substrate, as taught by Kuramata, as the substrate in the triplexer of Bartur. The motivation would have been to produce the triplexer economically.

Claims 22, 23, 25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bartur in view of Applicants Admitted Prior Art (AAPA).

Regarding claims 22, 23, 25, and 26, Bartur teaches an optic triplexer which includes an emitting laser capable of transmitting a 1310 nm signal, a first photodiode capable of receiving a 1490 nm signal, and a second photodiode capable of receiving a 1550 nm signal, wherein the laser and photodiodes are each monolithically integrated on a substrate. Bartur does not teach that the triplexer is incorporated by an optical network terminal (ONT) which, along with an optical line terminal (OLT), is part of a passive optical network. AAPA teaches a passive optical network (Figure 1) comprising an OLT (element 106) and an ONT (element 110) that incorporates an optic triplexer



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(element 102). It would have been obvious to one of ordinary skill in the art at the time of the invention to provide the passive optical network of AAPA in the implementation of the triplexer of Bartur. The motivation would have been to use the triplexer to deliver useful information, such as voice, video, and data, which would not be possible if the triplexer were not part of such a network.

Claims 24 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bartur in view of AAPA further in view of Kondo.

Regarding claims 24 and 27, Bartur in view of AAPA teaches the limitations of the base claims 22 and 25, respectively. Bartur in view of AAPA does not teach that the laser is placed on the first photodiode. Kondo teaches an optic device comprising an emitting laser that is monolithically integrated and placed on top of at least one photodiode that is monolithically integrated on a substrate (paragraph 41). It would have been obvious to one of ordinary skill in the art at the time of the invention to place the laser of Bartur on top of one of the photodiodes as taught by Kondo. The motivation would have been to save space, since this implementation would produce a more compact triplexer.

#### ***Allowable Subject Matter***

Claims 4, 12, 17, 18, 31, and 33 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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Regarding claims 4, 12, 31, and 33, Bartur, either alone or in combination with the other prior art of record, does not disclose or render obvious the teaching of a thin film filter located between the laser and a photodiode.

Regarding claims 17 and 18, Bartur, either alone or in combination with the other prior art of record, does not disclose or render obvious the step of forming a thin film filter on top of a photodiode.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry Martin Blevins whose telephone number is 571-272-8581. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached at 571-272-2415. The fax number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JMB



**Brian Healy**  
**Primary Examiner**